

CLAIMS

1. A waterborne copolymer dispersion characterised in, that it comprises 0.1-25%, such as 1-10% or 2-6%, by weight of at least one alkenyl functional dendritic polymer built up from a dendritic core polymer, which core polymer is a hydroxy-functional dendritic polyester, polyether, polyesteramide or polyetheramide and optionally is chain extended, and at least one alkenyl functional compound bonded to said core polymer and/or its optional chain extension, and that said alkenyl functional dendritic polymer is copolymerised to a polymer backbone of at least one homo or copolymer obtainable by polymerisation in an aqueous medium of at least one polymerisable allyl, vinyl, maleic or diene monomer.
2. A copolymer dispersion according to Claim 1 characterised in, that said at least one alkenyl functional dendritic polymer is copolymerised to said polymer backbone in a one stage emulsion copolymerisation.
3. A copolymer dispersion according to Claim 1 characterised in, that said at least one alkenyl functional dendritic polymer is copolymerised to polymer backbone in a multi stage emulsion copolymerisation.
4. A copolymer dispersion according to Claim 2 or 3 characterised in, that said emulsion copolymerisation yields latex particles having a heterogeneous morphology, such as a core-shell morphology.
5. A copolymer dispersion according to Claim 1-4 characterised in, that said dendritic core polymer is chain extended by addition of at least one alkylene oxide.
6. A copolymer dispersion according to Claim 5 characterised in, that said alkylene oxide is ethylene oxide, propylene oxide, 1,3-butylene oxide, 2,4-butylene oxide, cyclohexene oxide, butadiene monoxide and/or phenylethylene oxide.
7. A copolymer dispersion according to any of the Claims 1-6 characterised in, that said alkenyl functionality is obtained by addition of at least one aliphatic or aromatic unsaturated carboxylic acid or a corresponding anhydride or halide.
8. A copolymer dispersion according to any of the Claims 1-7 characterised in, that said alkenyl functionality is obtained by addition of acrylic acid, methacrylic acid, crotonic acid, isocrotonic acid, or a corresponding anhydride or halide; maleic acid or

anhydride and/or fumaric acid; or soybean fatty acid, linseed fatty acid, tall oil fatty acid, castor fatty acid, dehydrated castor fatty acid, sunflower fatty acid, oleic acid, linoleic acid and/or linolenic acid.

9. A copolymer dispersion according to any of the Claims 1-7 characterised in, that said alkenyl functionality is obtained by addition of at least one unsaturated carboxyfunctional ester, polyester, ether and/or polyether.
10. A copolymer dispersion according to any of the Claims 1-7 characterised in, that said alkenyl functionality is obtained by reaction with at least one alkenyl halide, such as allyl chloride and/or allyl bromide.
11. A copolymer dispersion according to any of the Claims 1-7 characterised in, that said alkenyl functionality is obtained by addition of an unsaturated carboxyfunctional ester of at least one saturated or unsaturated di, tri or polyfunctional carboxylic acid and at least one hydroxyfunctional allyl ether of at least one di, tri or polyhydric alcohol or at least one di, tri or polyhydric reaction product between at least one alkylene oxide and at least one hydroxyfunctional allyl ether of at least one di, tri or polyhydric alcohol.
12. A copolymer dispersion according to Claim 11 characterised in, that said di, tri or polycarboxylic acid is selected from the group consisting of maleic acid, fumaric acid, o-phthalic acid, isophthalic acid, terephthalic acid, tetrahydrophthalic acid, hexahydrophthalic acid, azeleic acid, adipic acid, trimellitic acid and a to a said acid corresponding anhydride.
13. A copolymer dispersion according to any of the Claims 1-6 characterised in, that said alkenyl functionality is obtained by addition of an unsaturated carboxyfunctional ester of maleic acid or anhydride and/or fumaric acid at least one saturated or unsaturated di, tri or polyhydric alcohol or at least one di, tri or polyhydric reaction product between at least one alkylene oxide and at least one saturated or unsaturated di, tri or polyhydric alcohol.
14. A copolymer dispersion according to any of the Claims 11-13 characterised in, that said at least one alkylene oxide is ethylene oxide, propylene oxide, 1,3-butylene oxide, 2,4-butylene oxide, cyclohexene oxide, butadiene monoxide and/or phenylethylene oxide.

15. A copolymer dispersion according to any of the Claims 11-14 characterised in, that said di, tri or polyhydric alcohol is selected from the group consisting of 1,ω-diol, a 5,5-di(hydroxyalkyl)-1,3-dioxane, a 2-alkyl-1,3-propanediol, a 2,2-dialkyl-1,3-propanediol, a 2-hydroxy-1,3-propanediol, a 2-hydroxy-2-alkyl-1,3-propanediol, a 2-hydroxyalkyl-2-alkyl-1,3-propanediol, a 2,2-di(hydroxyalkyl)-1,3-propanediol and a dimer, trimer or polymer of a said di, tri or polyhydric alcohol.
16. A copolymer dispersion according to Claim 15 characterised in, that said alkyl is C₁-C₂₄ alkyl or C₂-C₂₄ alkenyl, such as C₁-C₁₂ or C₂-C₈ alkyl or alkenyl.
17. A copolymer dispersion according to any of the Claims 11-14 characterised in, that said di, tri or polyhydric alcohol is selected from the group consisting of 1,4-butanediol, 1,5-pentanediol, 1,6-hexanediol, 1,6-cyclohexane dimethanol, 5,5-di-hydroxymethyl-1,3-dioxane, 2-methyl-1,3-propanediol, 2-methyl-2-ethyl-1,3-propanediol, 2-ethyl-2-butyl-1,3-propanediol, neopentyl glycol, dimethylolpropane, 1,1-dimethylolcyclohexane, glycerol, trimethylolethane, trimethylolpropane, diglycerol, ditrimethylolethane, ditrimethylolpropane, pentaerythritol, dipentaerythritol, anhydroenneaheptitol, sorbitol and mannitol.
18. A copolymer dispersion according to any of the Claims 1-17 characterised in, that said polymerisable monomer is acrylic acid, methacrylic acid, crotonic acid, isocrotonic acid, itaconic acid, maleic anhydride and/or fumaric acid.
19. A copolymer dispersion according to any of the Claims 1-17 characterised in, that said polymerisable monomer is glycidyl acrylate or glycidyl methacrylate.
20. A copolymer dispersion according to any of the Claims 1-17 characterised in, that said polymerisable monomer is acrylamide, methacrylamide and/or ethylimidazolidon methacrylate.
21. A copolymer dispersion according to any of the Claims 1-17 characterised in, that said polymerisable monomer is a C₁-C₁₀ alkyl acrylate or methacrylate, such as methyl acrylate, ethyl acrylate, butyl acrylate, 2-ethylhexyl acrylate, methyl methacrylate, ethyl methacrylate and/or butyl methacrylate.
22. A copolymer dispersion according to any of the Claims 1-17 characterised in, that said polymerisable monomer is ethylene and/or propylene.

23. A copolymer dispersion according to any of the Claims 1-17 characterised in, that said polymerisable monomer is styrene and/or divinylstyrene.
24. A copolymer dispersion according to any of the Claims 1-17 characterised in, that said polymerisable monomer is vinylacetate, vinyl propionate, vinyl versatate and/or dibutyl maleate.
25. A copolymer dispersion according to any of the Claims 1-17 characterised in, that said polymerisable monomer is butadiene and/or isoprene.
26. A copolymer dispersion according to any of the Claims 1-25 characterised in, that it comprises at least one polymerisable surfactant and/or a conventional surfactant.
27. Use of a waterborne copolymer dispersion according to any of the Claims 1-26, in binders for coatings, such as decorative and/or protective paints and lacquers, adhesives and glues.